AFRICAN INSTITUTE FOR MATHEMATICAL SCIENCES
SCHOOLS ENRICHMENT CENTRE (AIMSSEC)
AIMING HIGH
This INCLUSION AND HOME LEARNING GUIDE
suggests related learning activities for all ages from 4 to 18
on the theme of SORTING INTO SETS
Just choose whatever seems suitable for your group of learners
The original **PEOPLE STATS 30-MINUTE GLOBAL LESSON**
was designed for Years 4 to 13

PEOPLE STATS 30-MINUTE GLOBAL LESSON

Resources: outdoor or indoor space and 4 long pieces of string tied together at one end. Red and yellow headbands, sashes or stickers (some of each colour, not necessarily equal numbers) to be distributed randomly.

People 2-Way Contingency Table

Reds 10 years and under	Reds over 10 years old
Yellows 10 years and under	Yellows over 10 years old

Mark out 4 regions on the ground. Adjust the age split to suit your group. Label the regions in a similar way to this table.

Explain that everyone, including the teacher or group leader, must put themselves into one of the regions.

When you've agreed that everyone is in the right place ask the children to count the numbers of reds and yellows and add them up. Then ask them to count the numbers of under 10s and over 10s and add them. What do they notice? Ask them how they might record this information on paper.

People Pie Chart

Red 10 and under | Red over 10s
Yellow 10 and under | Yellow over 10s
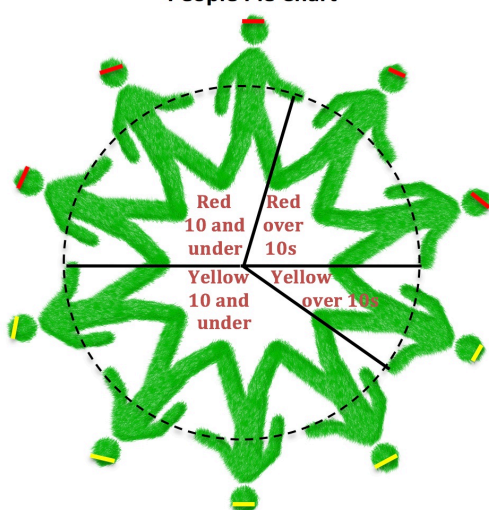
Form a circle, place the knotted end of the strings at the centre and give the other ends to 4 people to split the circle into 4 sectors, one for each of the groups.

Ask the learners what they think the 4 sectors of the circle represent. Then put the 4 labels down on the ground so that everyone can see them.

Ask the learners how they might record this on paper.

HOME-LEARNING
If you are working in a small home-learning group, make a list of your family, parents, brothers and sisters, grandparents, aunts, uncles and cousins. Split them into males and females and use ages under 20 and over 20 rather than age 10. You could include some friends. Then instead of doing the lesson described above, draw the People 2-Way Contingency Table and People Pie Chart for your family. Use stick people and write names on them.

	10 and under	Over 10s	Totals
Red	3	2	5
Yellow	4	1	5
Totals	7	3	10

If time, and depending on the age of the participants, the class can talk about how to record the 2-way table and pie chart. This can be done on the board and/or learners can record them in their workbooks.

The group might discuss the angle of the sector that represents each person in the pie chart: ($360^\circ / 10 = 36^\circ$)

HELP

First sort your group into two sets using your age split as the criterion.

Then, one by one, sort each of these sets into the reds and the yellows.

This will give you the 4 sets to go into the 4 boxes in the People Contingency Table.

NEXT

EPIDEMIC

Twenty per cent of the inhabitants of a city have been inoculated against a certain disease. A city is hit by an epidemic. The chance of infection amongst those inoculated is 10% but amongst the rest it is 75%.

1. Copy and fill in the contingency table and the Venn diagram below and use them to answer the questions.

Venn diagram showing the proportions of inoculated or infected people in the city.
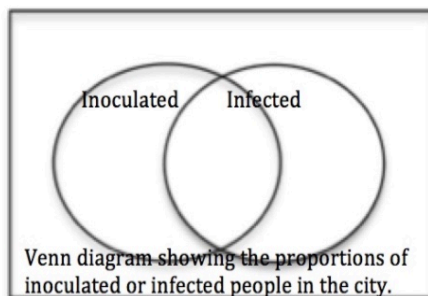
2. What proportion are infected?

	Inoculated	Not inoculated	
Infected			
Not infected			
Totals			

3. If a man is chosen at random and found to be infected, what is the chance of his having been inoculated?

https://aiminghigh.aimssec.ac.za/years-10-12-epidemic/

INCLUSION AND HOME LEARNING GUIDE
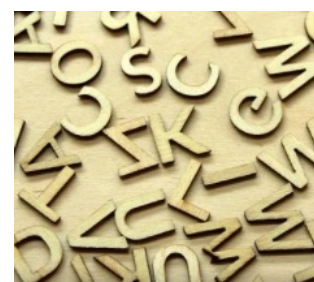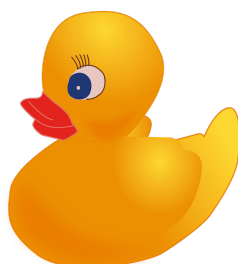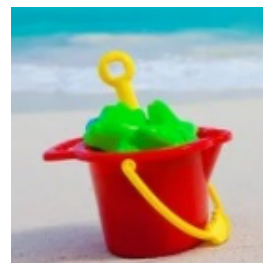# THEME: SORTING INTO SETS

Early Years and Lower Primary

Cut out these pictures.

Ask the children to sort these toys.

Let the children make up their own categories to use for sorting.

Talk about why each toy goes into the set you are putting it in rather than in another set.

Sort again using different sorting criteria.

Ask the children to sort the toys into 'TOYS WITH WHEELS' and 'TOYS WITH NO WHEELS'. Now you will have 2 sets.

Now sort each set into ''TOYS WITH SOME YELLOW OR GOLD COLOUR' and 'TOYS WITH NO YELLOW OR GOLD IN THEM'.

Now you will have 4 sets. Put them into the 4 boxes in the table below.

Count the numbers and fill in the numbers in the table.

	Toys with wheels	Toys with no wheels	
Toys with yellow or gold colouring			
Toys with no yellow			

How many toys are there in each box? How many toys are there altogether?

Why do this activity?

People Maths involves the learners physically enacting some mathematics and they usually find this an enjoyable way to learn. The People Stats 30-minute Lesson provides an experience that helps the learners to understand and remember the concepts of 2-way contingency tables and pie charts. If there are fewer that 6 learners in the group then they can draw their family-2-way table and pie chart represent their whole family, all generations of the family, and they can even include friends if they want to do so.

Learning objectives
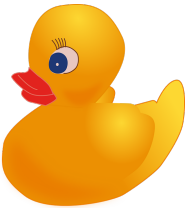
In doing this activity students will have an opportunity to:
- develop a deeper understanding of 2-way contingency tables;
- develop a deeper understanding of pie charts;

Generic competences

In doing this activity students will have an opportunity to:
- collaborate with peers in a practical activity that depends on mutual agreements to achieve a common purpose;
- think and reason logically and give explanations and proofs;
- think flexibly, be creative and innovative and apply knowledge and skills;
- develop the skill of visualization and create visual images to represent concepts.

SOLUTION TO EARLY YEARS AND LOWER PRIMARY TASK

	Toys with wheels	Toys with no wheels	
Toys with yellow or gold			12
Toys with no yellow			4
	4	12	16

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Follow up

EARLY YEARS AND LOWER PRIMARY
Robot Monsters https://nrich.maths.org/2404
Eggs in Baskets https://nrich.maths.org/eggsinbaskets
Teddy Town https://nrich.maths.org/108

UPPER PRIMARY
Ice Cream Pie

LOWER SECONDARY
Drinking Water
Match the Matches

UPPER SECONDARY
Epidemic
Land and Sea Statistics
1855 and 2020 Florence Nightingale's Pie Charts

Go to the **AIMSSEC AIMING HIGH** website for lesson ideas, solutions and curriculum links: http://aiminghigh.aimssec.ac.za
Subscribe to the **MATHS TOYS YouTube Channel**
https://www.youtube.com/c/mathstoys
Download the whole AIMSSEC collection of resources to use offline with the AIMSSEC App see https://aimssec.app Find the App on Google Play.

Note: The Grades or School Years specified on the AIMING HIGH Website correspond to Grades 4 to 12 in South Africa and the USA, to Years 4 to 12 in the UK and school years up to Secondary 5 in East Africa.
New material will be added for Secondary 6.
For resources for teaching A level mathematics (Years 12 and 13) see https://nrich.maths.org/12339
Mathematics taught in Year 13 (UK) & Secondary 6 (East Africa) is beyond the SA CAPS curriculum for Grade 12

	Lower Primary Approx. Age 5 to 8	Upper Primary Age 8 to 11	Lower Secondary Age 11 to 15	Upper Secondary Age 15+
South Africa	Grades R and 1 to 3	Grades 4 to 6	Grades 7 to 9	Grades 10 to 12
East Africa	Nursery and Primary 1 to 3	Primary 4 to 6	Secondary 1 to 3	Secondary 4 to 6
USA	Kindergarten and G1 to 3	Grades 4 to 6	Grades 7 to 9	Grades 10 to 12
UK	Reception and Years 1 to 3	Years 4 to 6	Years 7 to 9	Years 10 to 13